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COMMENTARY

Portal vein arterialization: 'enjoy' it responsibly

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Once again, our colleagues from Paul Brousse Hospital[1] must be congratulated for the experience they have accrued and, more importantly, for providing relevant evidence to the surgical community, albeit that the number of patients they report is small. This current article focuses on the extreme situation in which the liver parenchyma is left with no arterial supply following a surgical procedure. Unless oxygen is provided to the liver, the outcome is likely to be dismal.

To overcome this challenge, the authors[1] suggest performing portal vein arterialization (PVA) and present the results of the largest number of patients with the longest follow-up reported to date. They also discuss an extensive literature review.[1]

The expectation is that emergency re-arterialization of the liver will allow the organ, including not only hepatocytes but also, and in particular, the biliary tree, to survive while the body develops arterial collaterals. The results emerging from this combined group of transplant and hepatic resection patients are exceptional: the authors report an overall survival rate of 63% at a median follow-up of 13 months.[1]

A number of factors should be considered in order to facilitate better understanding of the impact of PVA. The authors[1] describe each case precisely and the reader should reflect on the detail. In the selected group of patients who underwent hepatic resection, PVA either extended the possibility of negative margin (R0) resection or rescued an extremely serious situation in which the hepatic artery had been injured or lost. In the latter context of an unplanned interruption of the hepatic artery, there was simply no alternative. Of the seven transplant recipients, three suffered a graft loss, one of whom died. The benefits to be derived from PVA in patients with acute hepatic artery thrombosis (HAT) are more debatable because an alternative strategy, namely the standard of care, retransplantation, is available. However, clearly this option is dependent upon access to a super-urgent or priority registration. If the outcome on intention to treat after listing is poor, such as might result from a low donation rate or an unsatisfactory super-urgent registration scheme, PVA might well be considered as an alternative strategy or even as a bridge to a more elective surgical scenario, as the paper implies.[1]

The authors[1] suggest that mortality following retransplantation for HAT may reach 50%, but this statistic does not reflect current data; recent large reviews,[2] such as that from the University of California Los Angeles, report better outcomes. In addition, the likelihood of the successful salvage of a graft should be balanced against the very probably already established ischaemic biliopathy, particularly in patients with late HAT presenting with sepsis or bilomas.

Morbidity following PVA has been high, but this should be considered in the context of the natural course of events in a de-arterialized liver. Following PVA, up to 44% of patients experienced complications resulting from portal hypertension, although only three patients required invasive treatment and two ultimately died.[1] On four occasions the PVA shunt was affected by thrombosis, but intervention was required in only two of these patients, one of whom underwent repeat surgery and subsequently died and one of whom underwent repeat liver transplantation.[1]

The authors[1] provide extremely valuable information on their technique of choice when PVA is considered and address the issue of longterm management. Ideally, PVA should be interrupted in an elective manner to minimize the consequences of an arterialized portal vein.

The role of PVA remains uncertain, particularly within the transplant setting. A great deal of information is made available to enable individual surgeons to determine where to position this technique in their practice. There is no doubt that PVA should be considered as part of the surgical armamentarium in hepatopancreatobiliary and liver transplant surgery, but its careful application is essential. It is not for the faint-hearted.

References

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